

ABSTRACT

A simple technique for introducing a hybrid alignment or a homeotropic (vertical) alignment into
5 liquid crystal films, which, by their nature, tend to have a horizontal alignment of liquid crystal molecules. The technique does not require special alignment films.

A liquid crystal composition for forming a liquid crystal film contains a polymerizable liquid crystal
10 compound and a hydrolysate of an alkoxysilane compound. The hydrolysate of the alkoxysilane compound contains a siloxane oligomer of which degree of polymerization is from 2 to 25. Furthermore, the alkoxysilane compound is a trialkoxysilane compound having a functional group. This
15 liquid crystal film composition can be produced by hydrolyzing an alkoxysilane compound to obtain a hydrolysate and then uniformly mixing the hydrolysate with a polymerizable liquid crystal compound. Alternatively, it can be obtained by uniformly mixing the alkoxysilane
20 compound with the polymerizable liquid crystal compound and subsequently hydrolyzing the alkoxysilane compound in the mixture. One mole of the alkoxysilane compound is preferably hydrolyzed with 0.1d to 2.0d mol of water, given that the number of alkoxyl groups in a molecule of
25 the alkoxysilane compound is d. An optically anisotropic
SC(PCT) -87US

film can be obtained by applying the liquid crystal film composition to a base film, causing the liquid crystal molecules in the composition to align in a nematic alignment, and curing the composition. The alignment of
5 the liquid crystal molecules in the film is preferably a nematic hybrid or nematic homeotropic (vertical) alignment.